

ceramic layers (12a-f; 22a-d; 41a-f) and at least partially holds the electrical connector (18a,b; 28a,b; 58a,b).

- 5     4.     The drive or sensor element as claimed in claim 3,  
         in which the connector (18a,b; 28a,b; 58a,b) is a  
         wire which extends beyond the surfaces of the  
         piezoelectric ceramic layers (12a-f; 22a-d;  
         41a-f).
- 10                     5.     The drive or sensor element as claimed in one of  
                       claims 3 or 4 having at least three piezoelectric  
                       ceramic layers (12a-f; 22a-d; 41a-f) and at least  
                       two grooves (14a-d; 24a-d; 56a-f), in which these  
15                     grooves (14a-d; 24a-d; 56a-f) are arranged offset  
                       with respect to one another and with respect to a  
                       longitudinal axis (29) of the drive or sensor  
                       element.
- 20                     6.     The drive or sensor element as claimed in one of  
                       claims 4 or 5 having a connector (18a,b; 28a,b;  
                       58a,b) which is in the form of a wire and is a  
                       wire having a rippled or zigzag structure.
- 25                     7.     The drive or sensor element as claimed in one of  
                       claims 1 to 6 having piezoelectric ceramic layers  
                       (12a-f; 22a-d; 41a-f) composed of PZT material.
8.     The drive or sensor element as claimed in one of  
30                     claims 1 to 7 having piezoelectric ceramic layers  
                       (12a-f; 22a-d; 41a-f) composed of  
                        $\text{PbMg}_{0.308}\text{Nb}_{0.617}\text{Ti}_{0.075}\text{O}_3$ .
9.     The drive or sensor element as claimed in one of  
35                     claims 1 to 8 having piezoelectric ceramic layers  
                       (12a-f; 22a-d; 41a-f) composed of a material  
                       having a Curie temperature of more than 400°C, for  
                       example composed of  $\text{Na}_{0.5}\text{Bi}_{4.5}\text{Ti}_4\text{O}_{15}$  or  $\text{Bi}_3\text{TiNbO}_9$ .

10. The drive or sensor element as claimed in one of  
claims 1 to 9 having electrode layers (16a-e;  
26a-d) composed of a metallic material having a  
Curie temperature of more than 400°C.
11. The drive or sensor element as claimed in one of  
claims 1 to 10 having electrode layers (16a-e;  
26a-d) composed of bismuth-titanate.
12. The drive or sensor element as claimed in one of  
claims 4 to 11 having connectors (18a,b; 28a,b;  
58a,b) which are in the form of wires and are  
composed of a metallic material having high-  
temperature stability at more than 250°C.
13. The drive or sensor element as claimed in one of  
claims 4 to 11 having connectors (18a,b; 28a,b;  
58a,b) which are in the form of wires and are  
composed of a material which contains silver and  
contains stainless steel, or of such a material  
which contains a nickel alloy.
14. A method for producing an electromechanical drive  
or sensor element having a layer structure, which  
comprises the following steps:
- production of ceramic layers (12a-f; 22a-d;  
41a-f) composed of electrically active material  
using a method which is normal in ceramic  
technology, having desired dimensions and  
having a margin of 2-3 mm for each dimension  
taking account of the following mechanical  
machining;
  - grinding the ceramic layers (12a-f; 22a-d;  
41a-f) until a predetermined thickness of, for  
example, 0.15 to 03 mm [sic] is reached;

- cutting a groove (14a-d; 24a-d; 56a-f) in one face of the ceramic layers (12a-f; 22a-d; 41a-f) which is to be metallized;
  - in which case the depth of the groove (14a-d; 24a-d; 56a-f) must be no deeper than half the thickness of the ceramic layer (12a-f; 22a-d; 41a-f) under consideration;
  - coating at least one face of the ceramic layers (12a-f; 22a-d; 41a-f) with metal by applying a paste containing silver twice and subsequent heat treatment at a temperature of 800-820°C;
  - applying adhesive to the metallized surfaces of two ceramic layers (12a-f; 22a-d; 41a-f) using cellulose adhesive;
  - diffusion welding of the layers to which adhesive has been applied by heat treatment at a temperature of 780-800°C and single-axis compression at a pressure of 3-5 kg/cm<sup>2</sup> over a period of 3 hours and cooling to room temperature;
  - drawing in each case one connector wire (18a,b; 28a,b; 58a,b) into a groove (14a-d; 24a-d; 56a-f);
  - polarization of the drive or of the sensor element by the action of an electric field on the wires (18a,b; 28a,b; 58a,b) at high temperature;
  - connection of the same poles of the drive or of the sensor element;
  - checking of the desired parameters and piezo-electric characteristics of the drive or of the sensor element.
15. A level limit switch (70) having a drive and having a sensor element as claimed in one of claims 1 to 14.

16. The level limit switch (70) as claimed in claim 15, in which the sensor element is separated from the drive by a non-polarized ceramic layer (82d).

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17. An acceleration sensor (40) having a sensor element as claimed in one of claims 1 to 14.